

Smoking & Tobacco Use

Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products


[For Healthcare Providers](#)
[For Health Departments](#)
[Frequently Asked Questions](#)
[Resources](#)
[Digital Press Kit](#)

CDC, the U.S. Food and Drug Administration (FDA), state and local health departments, and other clinical and public health partners are investigating a national outbreak of e-cigarette, or vaping, product use-associated lung injury (EVALI).



Updated February 25, 2020, at 1:00 PM EST

Overview

- CDC, FDA, and state health authorities have made progress in identifying the cause of EVALI.
- [Emergency department \(ED\) visits related to e-cigarette, or vaping, products](#) continue to decline, after sharply increasing in August 2019 and peaking in September.
- National and state data from patient reports and product sample testing show tetrahydrocannabinol (THC)-containing e-cigarette, or vaping, products, particularly from informal sources like friends, family, or in-person or online dealers, are linked to most EVALI cases and play a major role in the outbreak.
- Vitamin E acetate is strongly linked to the EVALI outbreak. Vitamin E acetate has been found in product samples tested by FDA and state laboratories and in patient lung fluid samples tested by CDC from geographically diverse states. Vitamin E acetate has not been found in the lung fluid of people that do not have EVALI.
- Evidence is not sufficient to rule out the contribution of other chemicals of concern, including chemicals in either THC or non-THC products, in some of the reported EVALI cases.

CDC will continue to update guidance related to EVALI as appropriate.

What We Know

About the Outbreak:

- **As of February 18, 2020**, a total of 2,807 [hospitalized EVALI cases or deaths](#) have been reported to CDC from all 50 states, the District of Columbia, and two U.S. territories (Puerto Rico and U.S. Virgin Islands).
 - Sixty-eight deaths have been confirmed in [29 states and the District of Columbia \(as of February 18, 2020\)](#).
- [Emergency department \(ED\) visits related to e-cigarette, or vaping, products](#) continue to decline, after sharply

increasing in August 2019 and peaking in September.

- National ED data and active case reporting from state health departments around the country show a sharp rise in symptoms or cases of EVALI in August 2019, a peak in September 2019, and a gradual, but persistent decline since then.
- Reasons for the decline are likely multifactorial and may be related to the following:
 - Increased public awareness of the risk associated with THC-containing e-cigarette, or vaping, product use as a result of the rapid public health response.
 - Removal of vitamin E acetate from some products.
 - Law enforcement actions related to illicit products.
- Laboratory data show that [vitamin E acetate](#), an additive in some THC-containing e-cigarette, or vaping, products, is strongly linked to the EVALI outbreak.
 - A [recent study](#) analyzed samples from 51 EVALI cases from 16 states and a comparison group of samples from 99 comparison individuals without EVALI for vitamin E acetate, plant oils, medium chain triglyceride (MCT) oil, coconut oil, petroleum distillates, and diluent terpenes.
 - Vitamin E acetate was identified in bronchoalveolar lavage (BAL) fluid samples (fluid samples collected from the lungs) from 48 of the 51 EVALI patients, but not in the BAL fluid from the healthy comparison group.
 - No other toxicants were found in BAL fluid from either group, except for coconut oil and limonene (1 EVALI patient each).
- Due to continued declines in new EVALI cases since September 2019, and the identification of vitamin E acetate as a primary cause of EVALI, today's release is the final CDC update on the number of hospitalized EVALI cases and deaths nationally. CDC will continue to provide assistance to states, as needed, related to EVALI and will provide any updates at: www.cdc.gov/lunginjury.

What CDC Recommends

- CDC and FDA recommend that people not use THC-containing e-cigarette, or vaping, products, particularly from informal sources like friends, family, or in-person or online dealers.
- Vitamin E acetate should not be added to any e-cigarette, or vaping, products. Additionally, people should not add any other substances not intended by the manufacturer to products, including products purchased through retail establishments.
- Adults using nicotine-containing e-cigarette, or vaping, products as an alternative to cigarettes should not go back to smoking; they should weigh all available information and consider using [FDA-approved smoking cessation medications](#). If they choose to use e-cigarettes as an alternative to cigarettes, they should completely switch from cigarettes to e-cigarettes and not partake in an extended period of dual use of both products that delays quitting smoking completely. They should contact their healthcare professional if they need help quitting tobacco products, including e-cigarettes, as well as if they have concerns about EVALI.
- E-cigarette, or vaping, products (nicotine- or THC-containing) should never be used by youths, young adults, or women who are pregnant.
- Adults who do not currently use tobacco products should not start using e-cigarette, or vaping, products.
- THC use has been associated with a wide range of health effects, particularly with prolonged frequent use. The best way to avoid potentially harmful effects is to not use THC-containing e-cigarette, or vaping, products.
- Persons engaging in ongoing cannabis use that leads to significant impairment or distress should seek evidence-based treatment by a healthcare professional.

Key Facts about Use of E-Cigarette, or Vaping, Products

- [Electronic cigarettes](#)—or e-cigarettes—are also called vapes, e-hookahs, vape pens, tank systems, mods, and electronic nicotine delivery systems (ENDS).

Key Facts about Vitamin E Acetate

- Vitamin E acetate is used as an additive, most notably in THC-containing e-cigarette, or vaping, products.
- Vitamin E is a vitamin found in many foods, including vegetable oils, cereals, meat, fruits, and vegetables. It

- Using an e-cigarette is commonly called vaping.
- E-cigarettes work by heating a liquid to produce an aerosol that users inhale into their lungs.
- The liquid can contain: nicotine, tetrahydrocannabinol (THC) and cannabinoid (CBD) oils, and other substances, flavorings, and additives. THC is the psychoactive mind-altering compound of marijuana that produces the “high.”

is also available as a dietary supplement and in many cosmetic products, like skin creams.

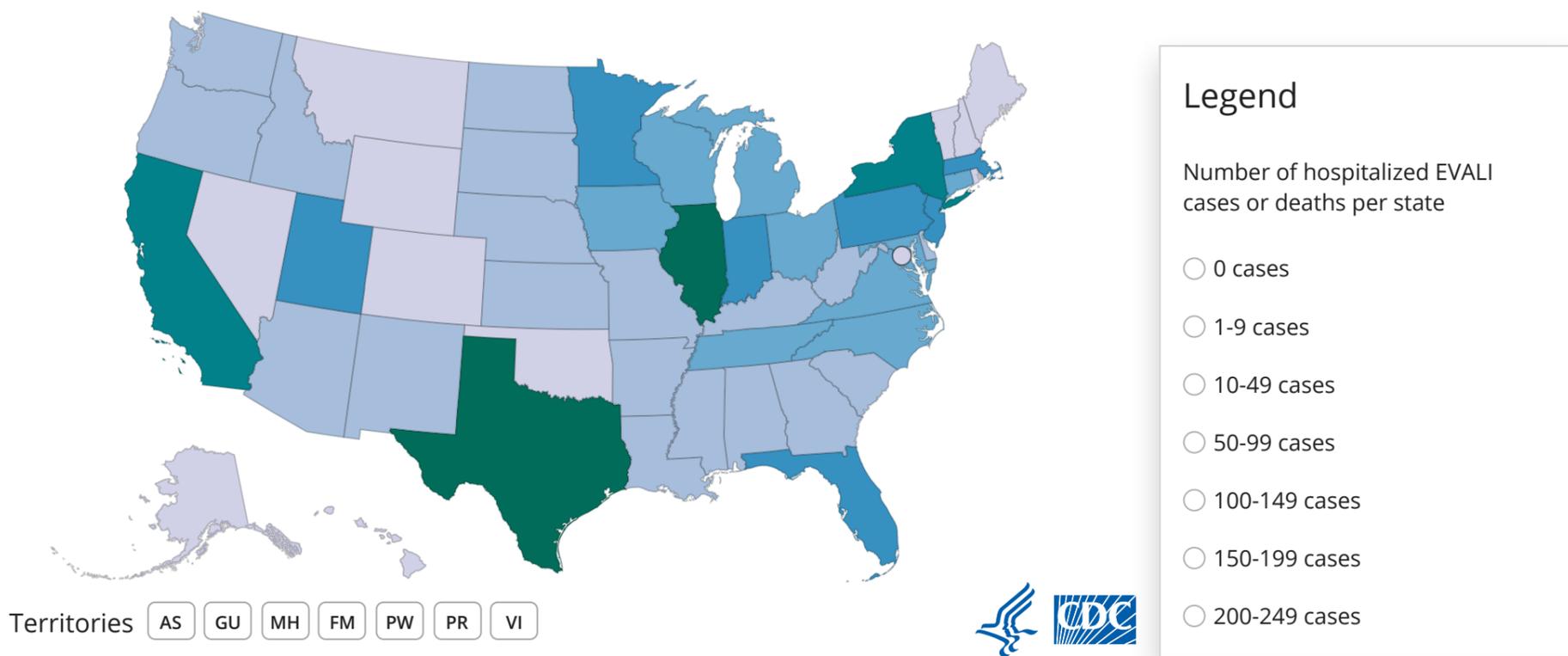
- Vitamin E acetate usually does not cause harm when ingested as a vitamin supplement or applied to the skin. However, previous research suggests that when vitamin E acetate is inhaled, it may interfere with normal lung functioning.

If you have questions about CDC’s investigation into the lung injuries associated with use of e-cigarette, or vaping, products, contact [CDC-INFO](#) or call [1-800-232-4636](#).

Latest Information

- **As of December 3, 2019**, CDC is only reporting hospitalized EVALI cases and EVALI deaths regardless of hospitalization status. CDC has removed nonhospitalized cases from previously reported case counts. [See Public Health Reporting for more information.](#)
- **As of February 18, 2020**, a total of 2,807 hospitalized e-cigarette, or vaping, product use-associated lung injury (EVALI) cases or deaths have been reported to CDC from 50 states, the District of Columbia, and two U.S. territories (Puerto Rico and U.S. Virgin Islands).
- Sixty-eight deaths have been confirmed in 29 states and the District of Columbia (**as of February 18, 2020**):
 - Alabama, California (4), Connecticut, Delaware, District of Columbia, Florida (2), Georgia (6), Illinois (5), Indiana (6), Kansas (2), Kentucky, Louisiana (2), Massachusetts (5), Michigan (3), Minnesota (3), Mississippi, Missouri (2), Montana, Nebraska, New Jersey, New York (4), Oregon (2), Pennsylvania, Rhode Island, South Carolina, Tennessee (2), Texas (4), Utah, Virginia and Washington (2).
 - The median age of deceased patients was 49.5 years and ranged from 15-75 years (**as of February 18, 2020**).
- Among the 2,668 hospitalized EVALI cases or deaths reported to CDC (**as of January 14, 2020**):
 - 66% were male
 - The median age of patients was 24 years and ranged from 13–85 years.
 - By age group category:
 - 15% of patients were under 18 years old;
 - 37% of patients were 18 to 24 years old;
 - 24% of patients were 25 to 34 years old; and
 - 24% of patients were 35 years or older.
- 2,022 hospitalized patients had data on substance use, of whom (**as of January 14, 2020**):
 - 82% reported using THC-containing products; 33% reported exclusive use of THC-containing products.
 - 57% reported using nicotine-containing products; 14% reported exclusive use of nicotine-containing products.
- 50% of EVALI patients who reported using THC-containing products provided data on product source (**as of January 7, 2020**):
 - 16% reported acquiring products only from commercial sources (recreational and/or medical dispensaries, vape or smoke shops, stores, and pop-up shops).
 - 78% reported acquiring products only from informal sources (family/friends, dealers, online, or other sources).
 - 6% reported acquiring products from both commercial and informal sources.
- 54% of EVALI patients who reported using nicotine-containing products provided data on product source (**as of January 7, 2020**):
 - 69% reported acquiring products only from commercial sources.
 - 17% reported acquiring products only from informal sources.
 - 15% reported acquiring products from both commercial and informal sources.

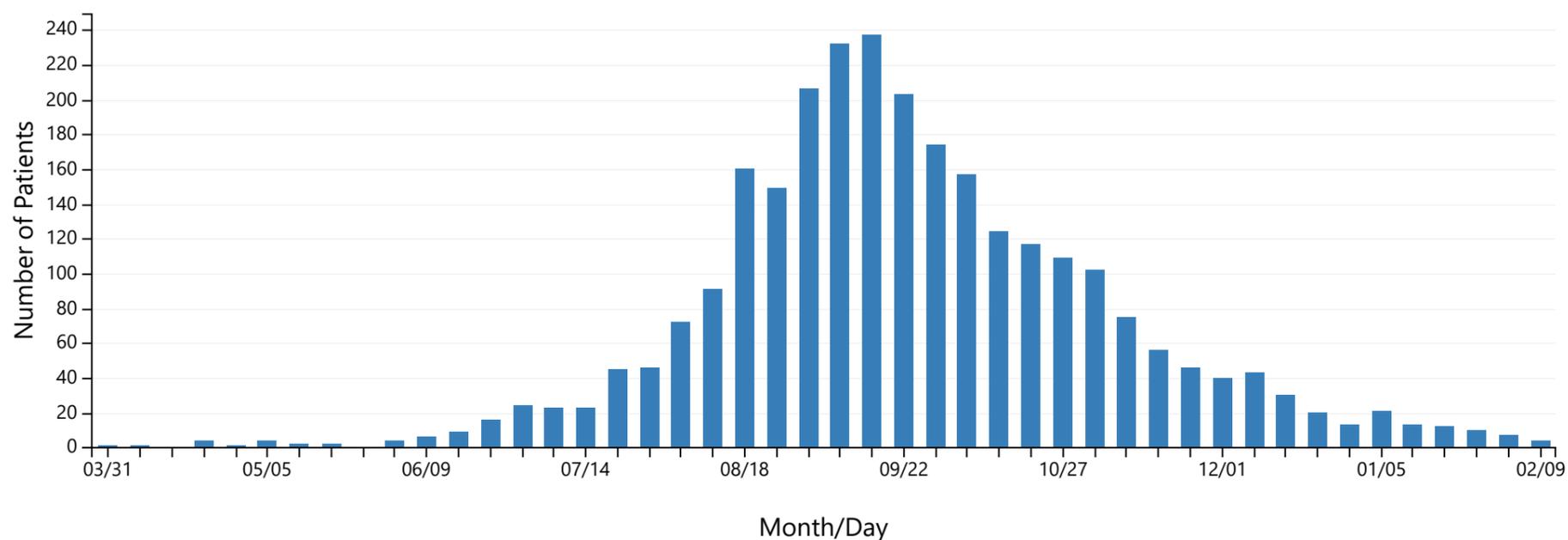
Number of Hospitalized EVALI Cases or Deaths Reported to CDC as of February 18, 2020



Data Table

[Download Data \(CSV\)](#)

Dates of symptom onset and hospital admission for patients with lung injury associated with e-cigarette use, or vaping — United States, March 31, 2019–February 15, 2020



Numbers do not sum to 2,807 due to missing admission dates.

Data Table

	03/31/2019	04/07/2019	04/14/2019	04/21/2019	04/28/2019	05/05/2019	05/12/2019	05/19/2019
Date of Admission (N=2734)	1	1	0	4	1	4	2	2

[Scroll for additional info](#)

For more information and resources for key stakeholders, visit [for Healthcare Providers](#) and [for State and Local Health Departments](#). [General resources](#) are also available.

Page last reviewed: February 25, 2020